

## A NEW LIVER SUTURE.\*

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IN this brief paper I desire to present a form of liver suture, simple, easy of application and efficient as a means of securing approximation of the tissues as well as hemostasis. As it is the intention at this time to present merely a preliminary report which I hope to supplement later by an article dealing more exhaustively with the subject of liver surgery no general discussion of the subject will be attempted.

The surgery of the liver, with the exception of the gall bladder and ducts, has not advanced during the past decade as rapidly as has abdominal surgery in general and standing prominently in the foreground as chief among the reasons preventing such advance has been the fear of hemorrhage.

During the last few years many investigators have attempted to solve the problem and much time and ingenuity have been expended in the efforts to secure a suture which would effectually control hemorrhage and produce coaptation of the liver wound. Many of the methods reported have been most ingenious, but most of them have presented one or both of the following drawbacks. First, more or less difficulty of execution and the necessity for limiting the suture to a comparatively small area of liver tissue; second, the necessity for leaving behind in the peritoneal cavity some non-absorbable or slowly absorbable material forming part of the scheme of the suture.

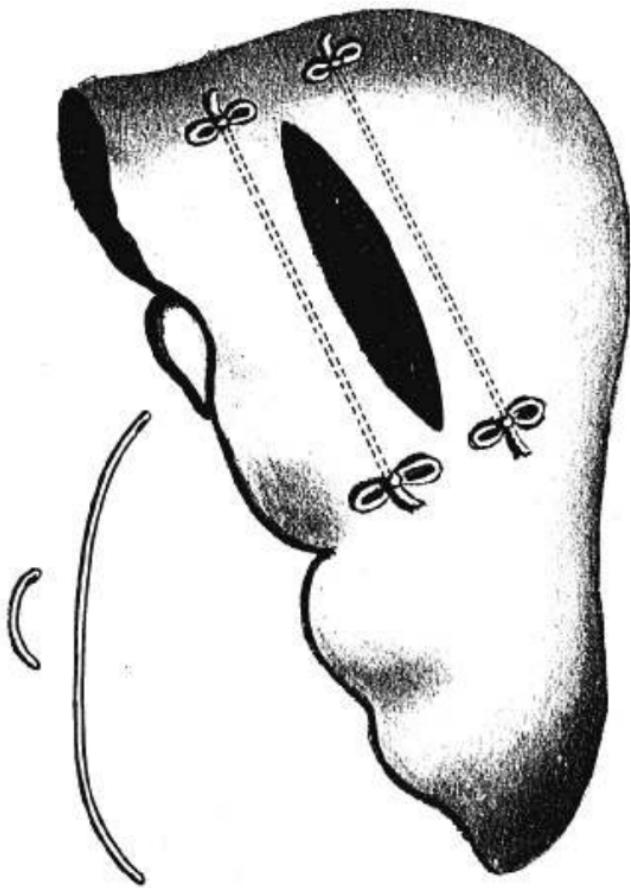
Without further discussion of the methods hitherto published I shall describe a suture which experimentally has proven very satisfactory in my hands.

This suture will permit the coaptation of a wound of the liver substance at the same time controlling the hemorrhage

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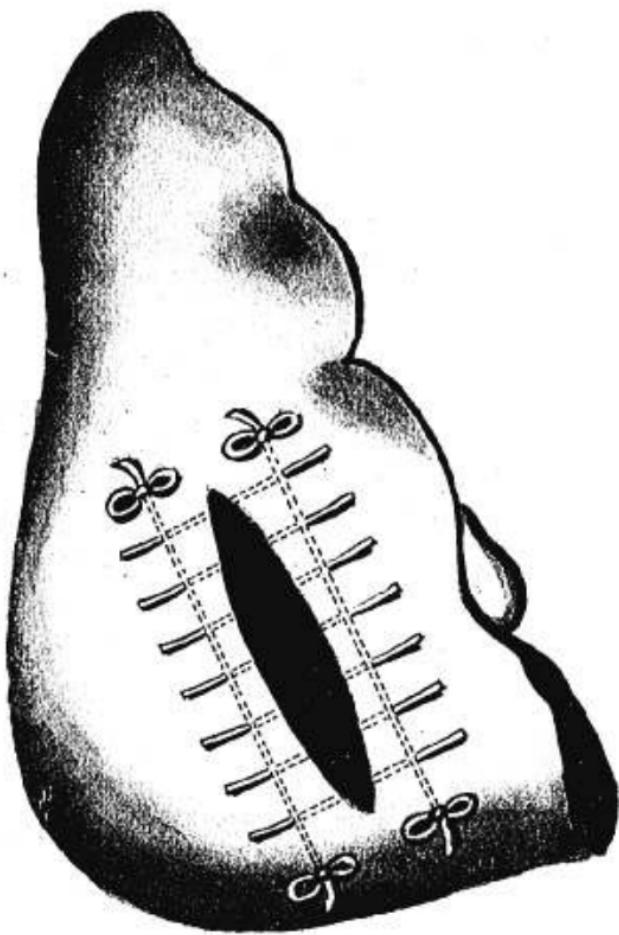
\* Read before Iowa State Medical Society, May 17, 1907.

FIG. 1.



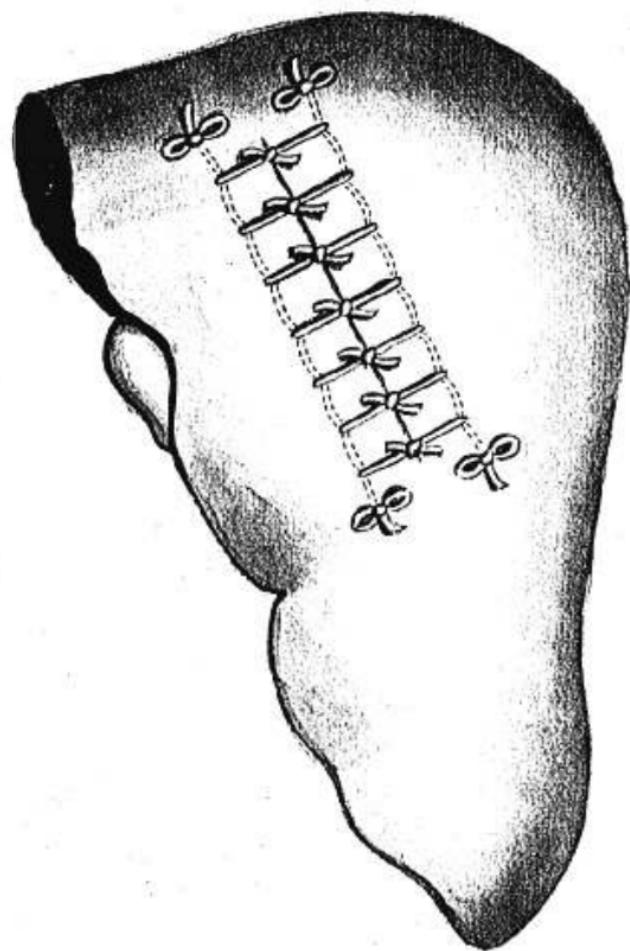
The sunken catgut strands in the tissue parallel to the wound to be sutured.

FIG. 2.



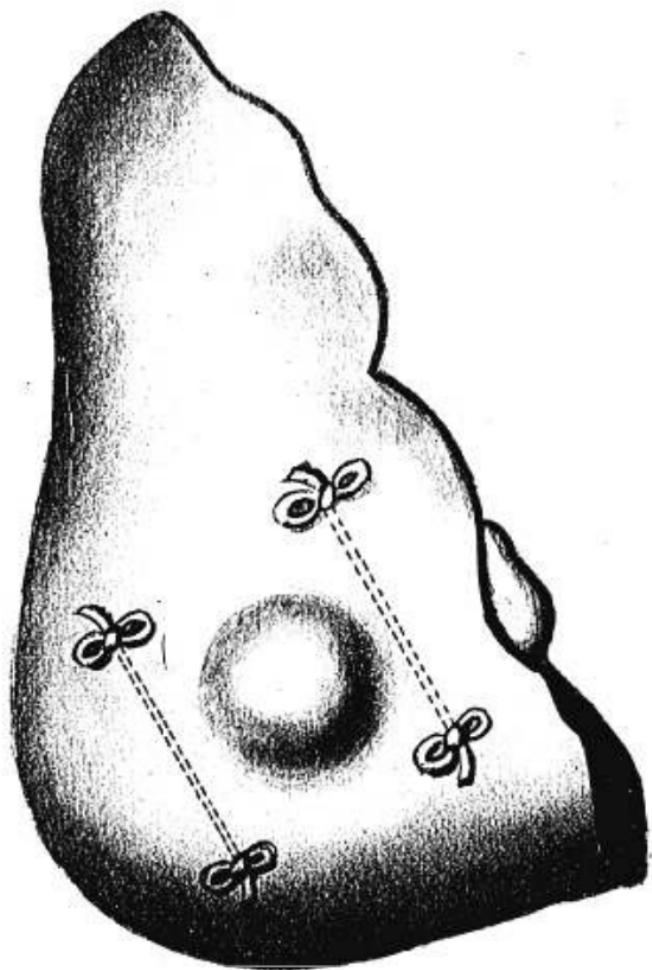
The transverse interrupted sutures introduced.

FIG. 3.



The transverse sutures tied.

FIG. 4.



Long parallel sutures introduced as a preliminary to the excision of a tumor from the liver.

without the necessity for packing and will also permit the resection of large or small areas of tissue for the radical extirpation of liver tumors.

Parallel with the wound in the liver or with the area to be excised and about one half inch from its edge upon either side insert deeply through the liver substance by means of a large, round, blunt needle shown in figure 1, a strand of No. 3 catgut. These needles, as well as the small, blunt needle mentioned later, are modifications of Kousnietzoff's liver needles which have been so successfully used and have proven very satisfactory. These strands should enter the liver tissue about one inch beyond the edge of the wound, run deeply through the liver substance and emerge the same distance from the opposite end of the wound. The ends of these catgut strands are now fastened by drawing them up snugly and tying to either end of both strands a small ordinary skein of catgut, which presenting a broad surface against the liver tissue prevents the indrawing of the suture ends. Transverse interrupted sutures (Fig. 2) of No. 3 catgut are now introduced by means of a small, blunt needle, also shown in Fig. 1, in such a manner that they engage upon either side of the wound the buried long strand of catgut. These may be tied as rapidly as introduced and exerting their traction upon the buried long suture may be tied snugly (Fig. 3) ensuring hemostasis and coaptation without the danger of their cutting out.

When it is desired to remove a portion of the liver tissue carrying with it a tumor this may be done by excising between the buried long sutures (Fig. 4) a wedge-shaped ellipse of liver substance and introducing the transverse sutures as above described.

Hemorrhage during this procedure may be controlled either by manual pressure or by elastic ligature until the transverse sutures are tied when it will immediately cease.

If desired any large veins presenting along the cut surface may be tied as recommended by Keen by placing a ligature about them with a small needle carrying fine catgut which precaution in my experimental work I have found unnecessary.

I have not yet had an opportunity to employ this suture upon the human being but should not hesitate to rely upon it at the first opportunity. In many experiments upon dogs I have found that it was possible to remove various amounts of liver tissue up to one half of the organ beyond which amount I have not tried to go and also that hemorrhage from any sort of a wound large or small in the liver substance could be in this manner easily controlled.

As the material used in this suture is plain catgut which having served its purpose will be absorbed the necessity for an open wound, gauze packing, etc., may in most cases be eliminated.

I do not offer this method as one that is perfect nor do I care to make any extravagant claims for it as my experience with it is as yet too limited. I offer it with the hope that as opportunity permits you will try it and demonstrate its value or its shortcomings.